Listing of the Claims

This listing of claims will replace all prior versions, and listings of claims in the application.

1-51. (Canceled)

52. (Previously presented) An *in vitro* method for synthesizing one or more nucleic acid molecules comprising one or more site-specific recombination sites, said method comprising:

(a) obtaining at least one isolated linear nucleic acid molecule;

(b) contacting said molecule *in vitro* with one or more adapters which comprise at least a first site-specific recombination site or portions thereof under conditions sufficient to add one or more of said adapters to one or more termini of said linear nucleic acid molecule; and

(c) mixing said linear nucleic acid molecule with at least one vector comprising at least a second site-specific recombination site or portions thereof, *in vitro* in the presence of at least one site-specific recombination protein, under conditions sufficient to cause recombination between said first and second site-specific recombination sites, wherein said site-specific recombination protein mediates said recombination.

53. (Previously presented) The method of claim 52, wherein said linear nucleic acid molecule is an isolated genomic DNA molecule.

54. (Previously presented) The method of claim 52, wherein said linear nucleic acid molecule is a cDNA molecule.

55. (Previously presented) The method of claim 52, wherein said linear nucleic acid molecule is produced by mechanical or enzymatic techniques.

56. (Previously presented) The method of claim 52, wherein said linear nucleic acid molecule is produced by digesting one or more nucleic acid molecules with one or more restriction endonucleases.

57. (Previously presented) The method of claim 52, wherein at least one adapter comprising at least one site-specific recombination site or portion thereof is added to both termini of said linear nucleic acid molecule.

58. (Previously presented) The method of claim 57, wherein the site-specific recombination sites or portions thereof at both termini of said linear nucleic acid molecule are different from each other.

59. (Previously presented) The method of claim 58, wherein said site-specific recombination sites or portions thereof do not substantially recombine with each other.

60. (Canceled).

61. (Previously presented) The method of claim 52, wherein said first and/or second site-specific recombination sites or portions thereof are engineered site-specific recombination sites.

62. (Previously presented) The method of claim 52, wherein said first and/or second site-specific recombination sites or portions thereof are selected from the group consisting of lambdoid *att* and *lox*.

63. (Previously presented) The method of claim 52, wherein said first and/or second site-specific recombination sites or portions thereof are lambdoid *att* sites.

64. (Previously presented) The method of claim 52, wherein said site-specific recombination protein is selected from the group consisting of Cre, Int, IHF, Xis and Fis.

65. (Previously presented) The method of claim 52, wherein said site-specific recombination protein is Int.

66. (Previously presented) The method of claim 52, wherein said recombination results in the production of a vector comprising said at least one linear nucleic acid molecule.

67. (Previously presented) The method of claim 52, wherein said at least one linear nucleic acid molecule is a population of nucleic acid molecules.

68. (Previously presented) The method of claim 52, wherein said at least one linear nucleic acid molecule is a library of nucleic acid molecules.

69. (Canceled)

70. (Canceled)

71. (Previously presented) An *in vitro* method for synthesizing one or more nucleic acid molecules comprising two or more site-specific recombination sites, said method comprising:

(a) obtaining at least one isolated linear nucleic acid molecule; and

(b) contacting said molecule *in vitro* with two or more adapters which comprise at least a first site-specific recombination site or portions thereof under conditions sufficient to add two or more of said adapters to one or more termini of said linear nucleic acid molecule,

wherein said two or more site-specific recombination sites do not recombine with each other.

72. (Previously presented) The method of claim 71, wherein said two or more site-specific recombination sites are selected from the group consisting of *lox* sites, lambdoid *att* sites and mutants and variants thereof.

73 (Previously presented) The method of claim 72, wherein said *lox* sites are selected from the group consisting of *lox*P, *lox*P511 and mutants and variants thereof

74. (Previously presented) The method of claim 72, wherein said *att* sites are selected from the group consisting of lambdoid *att*B, lambdoid *att*L, lambdoid *att*P, lambdoid *att*R and mutants and variants thereof.

75. (Previously presented) An *in vitro* method for synthesizing one or more nucleic acid molecules comprising two or more site-specific recombination sites, said method comprising:

(a) obtaining at least one isolated linear nucleic acid molecule; and

(b) contacting said molecule *in vitro* with one or more adapters which comprise at least a first and second site-specific recombination site or portions thereof under conditions sufficient to add one or more of said adapters to one or more termini of said linear nucleic acid molecule,

wherein said two or more site-specific recombination sites do not recombine with each other.

76. (Previously presented) The method of claim 75, wherein said two or more site-specific recombination sites are selected from the group consisting of *lox* sites, lambdoid *att* sites and mutants and variants thereof.

77. (Previously presented) The method of claim 76, wherein said *lox* sites are selected from the group consisting of *lox*P, *lox*P511 and mutants and variants thereof.

78. (Previously presented) The method of claim 76, wherein said *att* sites are selected from the group consisting of lambdoid *att*B, lambdoid *att*L, lambdoid *att*P, lambdoid *att*R and mutants and variants thereof.